

Some Issues for Interoperability of Large Digital Libraries: A View from CNI

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Coalition for Networked Information

ECDL Conference
DLFoundations 2008
24 April, 2008

Coalition for Networked Information (CNI)

- ▶ Founded in 1990 by ARL and EDUCAUSE
- ▶ Mission: accelerate progress in networked information related to research and education
- ▶ 200+ member institutions
- ▶ Executive Director Clifford Lynch
- ▶ www.cni.org

Some priorities

- ▶ Broad issues
 - ▶ Develop a user-centered view of digital libraries
 - ▶ Focus on interoperability of digital objects beyond those held in traditional libraries
- ▶ Specific issue
 - ▶ Author identity management within scholarly communication systems

A user-centered view of digital libraries

- What is a digital library?
 - Is it static, with relatively stable content, functionality, and policies?
 - Does the current digital library concept focus more on an institution-centric view than on a user-centric view?

To understand priorities for interoperability...

- ▶ Understand the uses that those at the leading edge are making or want to make of DLs
- ▶ Use qualitative as well as quantitative approaches
- ▶ Partner with researchers in the social sciences
- ▶ Study users in various disciplines

Who is creating digital libraries?

- ▶ Traditional libraries (universities, governments, etc.)
- ▶ Researchers
- ▶ Students
- ▶ General public

Potential interoperability

- ▶ For a resource created by researchers at U. Liverpool - a publicly available website of 3D organic chemistry animations
- ▶ Interoperate with textbooks, learning environments

The screenshot shows the homepage of the University of Liverpool's 'Interactive 3D Organic Reaction Mechanisms' website. The page features a navigation menu on the left with categories such as 'Introduction', 'C=O nucleophilic addition', and 'C=C addition'. The main content area includes a 'Welcome to the News Page' section with a list of updates from 2007 and 2008. A search bar is located on the right side, and a row of four small thumbnail images is displayed at the bottom, showing molecular models and electrostatic surfaces.

UNIVERSITY OF LIVERPOOL

INTERACTIVE 3D ORGANIC REACTION MECHANISMS

3D ORGANIC CHEMISTRY ANIMATIONS
Welcome to the News Page

This site contains interactive 3D animations for some of the most important organic reactions covered during an undergraduate degree with supporting information on reactivity.

Explore the various sections to find the reaction(s) of interest to you.

6 January 2008 Molecular photo booth feature added to resizable window view
4 January 2008 Atomic and bonding Molecular orbitals for small molecules added
1 January 2008 Dipoles and electrostatic surfaces with HOMO and LUMO added
31 December 2007 Molecular vibrations - infra-red spectroscopy added
28 December 2007 Improved layout adopted and Search facility added
18 November 2007 Orbitals section added to navigation
31 October 2007 Larger view feature added to many pages

Interactive 3D Organic Reaction Mechanisms

Search

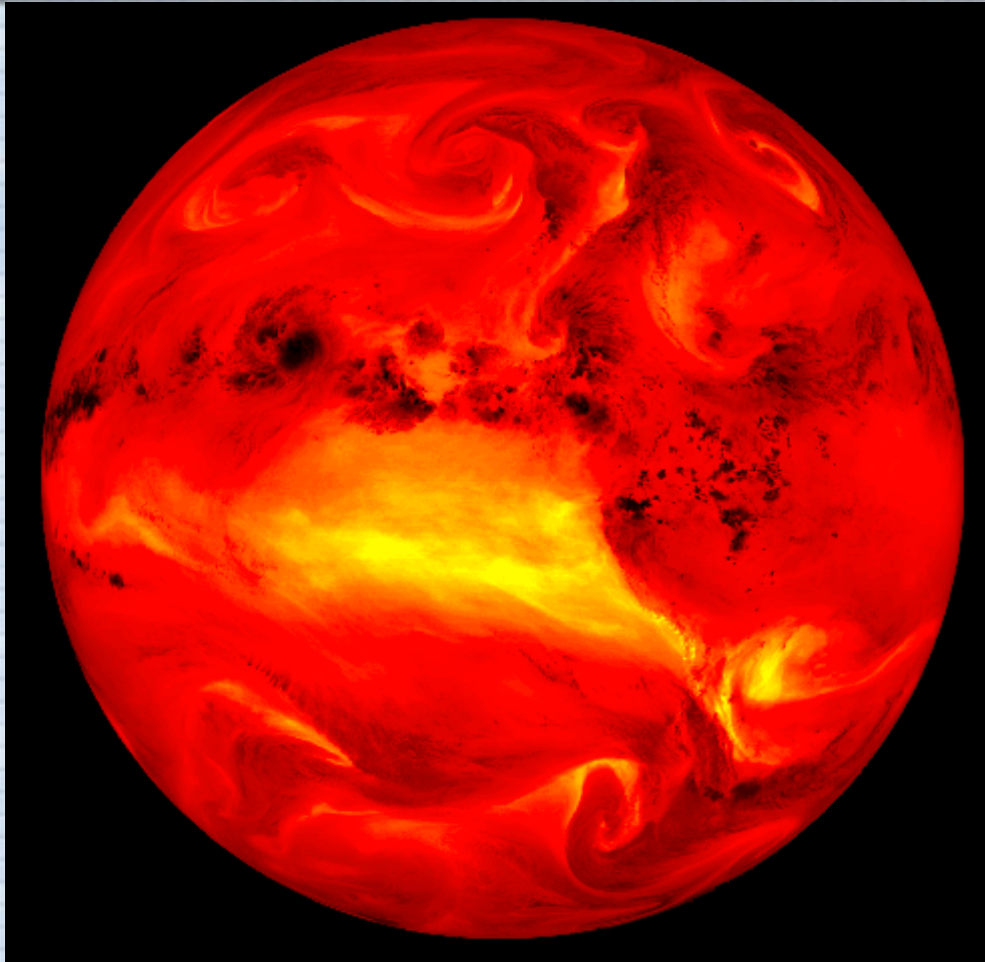
Create your own Custom Search Engine

Google

Details powered by Google

0.4 nm

Interoperate with other data? Maps?



Water vapor data visualization - http://rsd.gsfc.nasa.gov/images/GOES8_details.html

Interoperate with biological journals, reference tools, species collections?

- ▶ iSpecies.org
- ▶ A researcher at U. Glasgow creates a species search engine yielding many types of data

iSpecies.org

A species search engine

iSpecies is a test of E O Wilson's idea of a web page for each species. The data displayed are generated "on the fly" by querying r.page@bio.gla.ac.uk, or visit the [iSpecies blog](#).

Search:

elodea

Wikipedia

Elodea (syn. Anacharis) is a genus of aquatic plants often called the water weeds. Elodea is native to North America and it is Elodea into waterways in parts of Europe, Australia, Africa, Asia, and New Zealand has created a significant problem, and it is called American or Canadian water weed/pond weed is widely known as the generic water weed. The use of these names cau elodea...

[Original article](#)

Genomics from NCBI

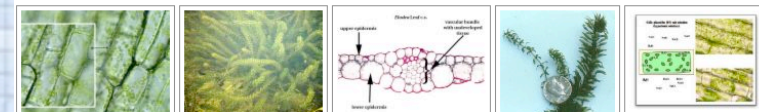
TaxId: [26324](#) Elodea [monocots] Sequences: [28](#) nucleotide, [9](#) protein

- [electronic Plant Information Centre](#)
- [Global Biodiversity Information Facility](#)
- [PLANTS Database \(USDA/NRCS\)](#)
- [The International Plant Names Index](#)
- [Integrated Taxonomic Information System](#)
- [USDA-ARS GRIN Taxonomy](#)
- [Index Nominum Genericoorum](#)
- [Vascular Tropicos](#)

Map from GBIF



Images from Yahoo



Möbius Transformations *Science* winner

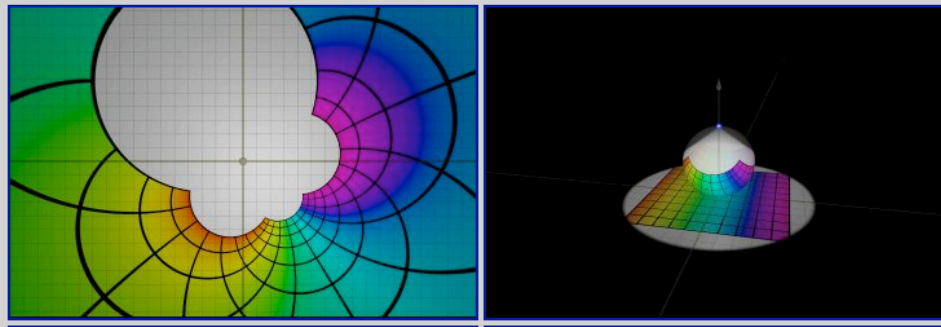
Möbius Transformations
Revealed

$$f(z) = \frac{az + b}{cz + d}$$

Möbius Transformations Revealed is a wonderful video clarifying a deep topic. This is amazing work by Douglas Arnold and Jonathan Rogness of the University of Minnesota.
— Edward Tufte

Möbius Transformations Revealed is a short video by Douglas Arnold and Jonathan Rogness which depicts the beauty of Möbius transformations and shows how moving to a higher dimension reveals their essential unity. It was one of the winners in the 2007 *Science and Visualization Challenge* and was featured along with the other winning entries in the September 28, 2007 issue of journal *Science*. The video, which was first released on YouTube in June 2007, has been watched there by more than a million viewers and classified as a "Top Favorite of All Time" in the Film & Animation category.

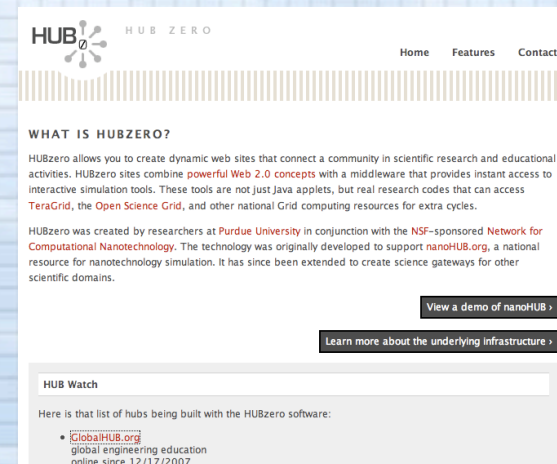
- View the [low resolution video](#) on YouTube
- View the [high resolution video](#) in the IMA video library
- Download the [high resolution video](#) in QuickTime format. Warning: the file is 130 MB.
- See some screenshots (click an image below for higher resolution):



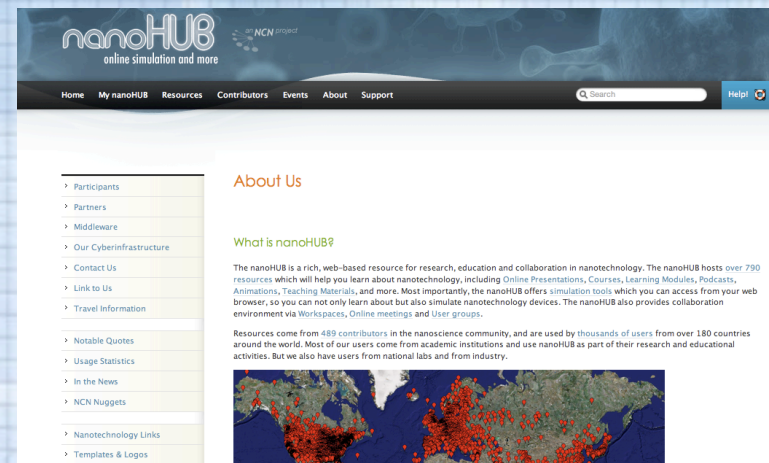
<http://www.ima.umn.edu/~arnold/moebius>

Hub Zero and nanoHUB at Purdue

- ▶ Access to collaborative simulation tools
- ▶ Access to Grid environment
- ▶ Collaborative Web 2.0 environment
- ▶ Oriented to teaching and learning



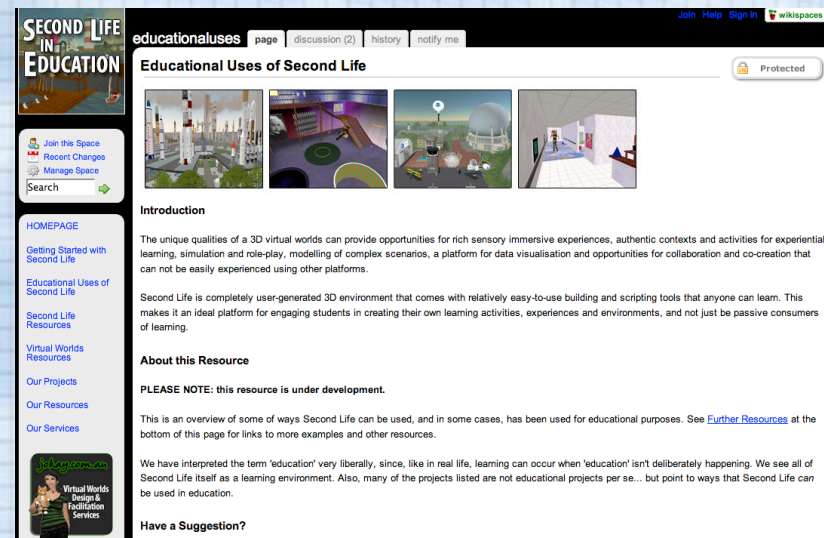
The screenshot shows the HUB ZERO website. At the top, there is a navigation bar with links for Home, Features, and Contact. Below the navigation bar, the text reads: "WHAT IS HUBZERO? HUBzero allows you to create dynamic web sites that connect a community in scientific research and educational activities. HUBzero sites combine powerful Web 2.0 concepts with a middleware that provides instant access to interactive simulation tools. These tools are not just Java applets, but real research codes that can access TeraGrid, the Open Science Grid, and other national Grid computing resources for extra cycles. HUBzero was created by researchers at Purdue University in conjunction with the NSF-sponsored Network for Computational Nanotechnology. The technology was originally developed to support nanoHUB.org, a national resource for nanotechnology simulation. It has since been extended to create science gateways for other scientific domains." Below this text, there are two buttons: "View a demo of nanoHUB" and "Learn more about the underlying Infrastructure". At the bottom of the screenshot, there is a section titled "HUB Watch" with a list of hubs, including "GlobalHUB.org global engineering education online since 12/17/2007".



The screenshot shows the nanoHUB website. At the top, there is a navigation bar with links for Home, My nanoHUB, Resources, Contributors, Events, About, and Support. Below the navigation bar, there is a search bar and a Help icon. The main content area is titled "About Us" and "What is nanoHUB?". The text reads: "The nanoHUB is a rich, web-based resource for research, education and collaboration in nanotechnology. The nanoHUB hosts over 790 resources which will help you learn about nanotechnology, including Online Presentations, Courses, Learning Modules, Podcasts, Animations, Teaching Materials, and more. Most importantly, the nanoHUB offers simulation tools which you can access from your web browser, so you can not only learn about but also simulate nanotechnology devices. The nanoHUB also provides collaboration environment via Workspaces, Online meetings and User groups. Resources come from 489 contributors in the nanoscience community, and are used by thousands of users from over 180 countries around the world. Most of our users come from academic institutions and use nanoHUB as part of their research and educational activities. But we also have users from national labs and from industry." Below the text, there is a map showing the locations of users, with red dots indicating their locations.

Teaching in virtual worlds

- ▶ Educators create experiences and events in virtual worlds like Second Life



The screenshot shows a Second Life wiki page titled "Educational Uses of Second Life". The page is protected and features a sidebar with navigation links and a main content area with text and images.

SECOND LIFE IN EDUCATION

Join this Space | Recent Changes | Manage Space | Search

HOME PAGE

- Getting Started with Second Life
- Educational Uses of Second Life
- Second Life Resources
- Virtual Worlds Resources
- Our Projects
- Our Resources
- Our Services

educationaluses | page | discussion (2) | history | notify me

Educational Uses of Second Life | Protected

Introduction

The unique qualities of a 3D virtual worlds can provide opportunities for rich sensory immersive experiences, authentic contexts and activities for experiential learning, simulation and role-play, modelling of complex scenarios, a platform for data visualisation and opportunities for collaboration and co-creation that can not be easily experienced using other platforms.

Second Life is completely user-generated 3D environment that comes with relatively easy-to-use building and scripting tools that anyone can learn. This makes it an ideal platform for engaging students in creating their own learning activities, experiences and environments, and not just be passive consumers of learning.

About this Resource

PLEASE NOTE: this resource is under development.

This is an overview of some of ways Second Life can be used, and in some cases, has been used for educational purposes. See [Further Resources](#) at the bottom of this page for links to more examples and other resources.

We have interpreted the term 'education' very liberally, since, like in real life, learning can occur when 'education' isn't deliberately happening. We see all of Second Life itself as a learning environment. Also, many of the projects listed are not educational projects per se... but point to ways that Second Life can be used in education.

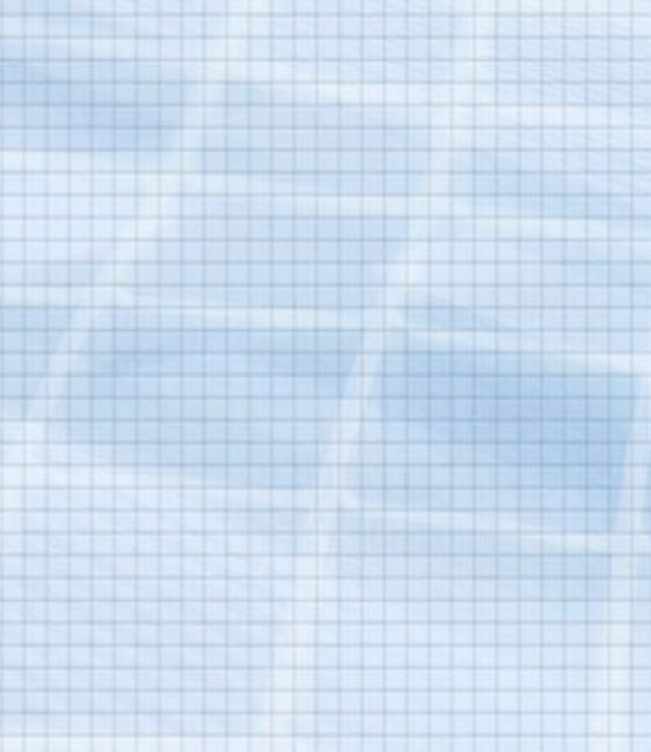
Have a Suggestion?

Student-created heart condition video - U. Alberta



<http://www.youtube.com/watch?v=GVxJJ2DBPiQ>

Opportunities for creativity are unlimited



Authors, Identity Management, and the Scholarly Communication System

- ▶ CNI invitational workshop held February 25, 2007
- ▶ Potential attendees submitted statements of interests and relevant work

What is the focus?

- ▶ Exploration and potential coordination of a range of developments in historically independent spheres related to management of authorial identity
 - ▶ Name authority files across monographic and journal literature with potential links to biographical information
 - ▶ Publisher and A/I services operating author identity management systems
 - ▶ University-based research management systems and faculty profile systems that include bibliographies and biographies

What is the focus?

- ▶ Exploration and potential coordination of developments
 - ▶ Coordination with identity management systems such as Shibboleth and Open ID
 - ▶ Need for capability of easily identifying an individual author and contacting him/her regarding intellectual property rights
 - ▶ Researchers and developers of bibliometric and webmetric systems need means of disambiguation and consolidation of author names

Participants

- ▶ Universities and consortia
 - ▶ US, Australia (APSR), UK (JISC)
- ▶ Content providers
 - ▶ Thomson Scientific, Elsevier, ICPSR, Proquest
- ▶ National libraries
 - ▶ Library of Congress, NCBI
- ▶ Other organizations
 - ▶ Mellon, ARL, OCLC, CrossRef, ISO/NISO, Internet2, IFLA, and others

Findings

- ▶ Many disparate efforts
- ▶ Many levels of focus
 - ▶ Content from a publisher
 - ▶ Content from an institution's researchers
 - ▶ Content in a discipline
- ▶ Publisher-developed systems shaping up quickly
- ▶ Report from CNI out by end of 2008

Thank you!